

GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF AUGUST 10, 1991

1. Eastern and Central United States:

WIDESPREAD RAINS BRING SPOTTY RELIEF FROM DRYNESS.

Showers and thunderstorms soaked portions of the eastern and central United States from the central Plains to the northern and mid-Atlantic coast, easing recent dryness. Some areas received from 50 - 450 mm of much needed rain, particularly the drought stricken central Corn Belt, where July monthly totals below 25 mm were observed. The rains were very beneficial for soybeans, which are at a critical development stage, but were not as significant for the corn crop, which is almost fully mature, according to press reports. Further east, little rain was measured across parts of the eastern Corn Belt and upper Ohio Valley as large deficits of 50-100 mm since mid June still prevail [11 weeks].

2. Central and Southern High Plains:

MONSOONAL RAINS CONTINUE.

Monsoonal flow persisted across the Southwest resulting in scattered heavy thunderstorm and spotty flash flooding in parts of New Mexico, Colorado, and Texas, according to the Office of Hydrology. Amounts of up to 3.5 inches were reported in northern New Mexico [6 weeks].

3. The Sahel:

WIDESPREAD SHOWERS CONTINUE.

Senegal and southwestern Mauritania received 10-50 mm of rains while similar amounts fell across Burkina Faso (20-80 mm) and east-central Sudan (20-40 mm). Despite the needed moisture, sizable six-week deficiencies of 50-150 mm continued across much of the affected regions [8 weeks].

4. Central and East-Central Europe:

DRIER WEATHER EASES FLOODING.

Floodwaters spawned by torrential rains began receding as little or no rain fell over much of the area last week. Pockets of scattered heavy rain (50-100 mm), however, were reported in portions of Austria, Romania, Czechoslovakia, and Poland. At least 100 square kilometers of farmland were reported to have been flooded in Austria [Ending after 3 weeks].

5. Central Pakistan:

MONSOON RAINS FINALLY BEGIN.

Heavy rains (80-100 mm) soaked much of the previously parched central Pakistan as the monsoon finally started [Ending after 10 weeks].

6. The Koreas, the Yangtze River Valley, Northeastern and South-Central China, and the Soviet Far East:

HEAVY RAINS CONTINUE.

Severe weather and heavy rain again plagued much of Heilungjiang, the Koreas, the Yangtze Valley, south-central China, and a portion of the Soviet Far East. According to press reports, heavy rain (100-150 mm) in the Khabarovsk region of the Russian Federation caused the Amur River to overspill its banks, flooding more than 3000 square kilometers of farmland. Part of the flooding was attributed to heavy rains upstream along the Sungari River in Heilungjiang, which flows into the Amur. Farther south, a rare tornado tore through the suburbs of Shanghai, taking at least five lives and destroying at least 1,000 houses, China's News Service reported. In central China's Sichuan Province, torrential cloudbursts generated mountain flooding that left 18 people dead while a main railway line linking Chongqing in Sichuan Province with Hubei Province was cut by the flooding on Thursday.

7. Taiwan and Southeast Fujian:

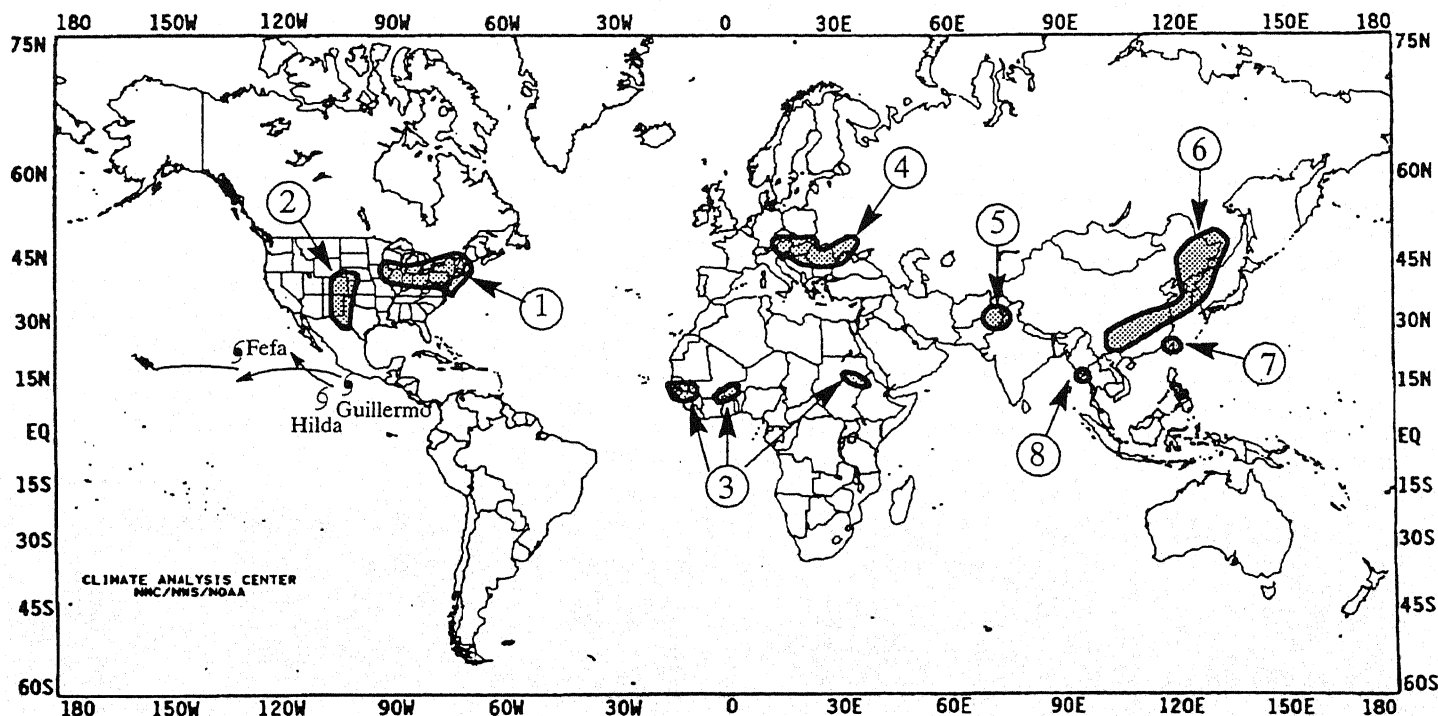
DRY WEATHER AGAIN PREVAILS.

Scant precipitation (< 20 mm) fell on most of Taiwan and southeastern Fujian last week following heavy rains in southern Taiwan during the previous week. Sizable moisture deficits (up to 440 mm since late June) persist in northern Taiwan [6 weeks].

8. Southern Burma:

TORRENTIAL RAINS CAUSE SEVERE FLOODING.

According to press reports, heavy rains caused Burma's biggest floods in 50 years, submerging seven towns and inundating more than 44,000 houses in the Irrawaddy River delta south of Rangoon. About 2250 square kilometers of crops, primarily rice paddies, were damaged by the storms [Episodic event].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF AUGUST 4 – 10, 1991

Stifling heat and humidity enveloped much of the deep South as apparent temperatures topped 105°F from Arkansas to South Carolina. Temperatures soared above the century mark in the southern Plains and lower Mississippi Valley while record highs were reported in the Southeast. The hot and humid conditions fueled thunderstorms across much of the southern U.S. Heavy rain, damaging winds, and hail were common from Texas to North Carolina. Flooding was reported in northern and western Florida after thunderstorms dumped heavy rains, pushing several rivers out of their banks. Heavy rain also produced flash flooding across the mid-Atlantic, Northeast, the Great Plains, and Rockies. Several roads in Plainview, NE were under water on Wednesday after storms dumped 7.25 inches of rain. Meanwhile, a section of Highway 9 near Hartsel, CO was washed away by brief, but torrential rain. Severe weather also affected the Ohio Valley and Midwest as tornadoes touched down from Iowa to Ohio. Heavy rain also fell across portions of parched Pennsylvania and the Midwest. Nearly 3 inches of precipitation was measured at Harrisburg, PA on Friday while up to 4 inches was recorded in central Illinois. Elsewhere, hot weather baked the Southwest with readings exceeding 110°F in Arizona and southern California. Farther west, torrential rains, associated with the remnants of Hurricane Fefa, inundated eastern Hawaii with Hilo measuring nearly 20 inches of precipitation.

The week began with a stalled cold front stretched from the mid-Atlantic westward to the Rockies. To the north of the frontal system unseasonably cool weather prevailed while to the south oppressive conditions dominated. Lows dipped into the forties across the extreme upper Midwest and Great Lakes on Sunday and Monday. The cool air eventually seeped southeastward, producing a record low of 45°F at Youngstown, OH on Tuesday morning. Farther south, hot and humid conditions persisted. Highs approaching 100°F were recorded from Texas to North Carolina and in conjunction with high humidities produced dangerous apparent temperatures. Record highs were observed in the Carolinas, Kentucky, and Alabama Sunday through Tuesday. Strong thunderstorms erupted along and to the south of the front, producing copious amounts of rain, strong wind gusts and hail. One storm generated 2 inches of rain in half an hour near Wimauma, FL and wind gusts to 75 mph. Severe weather also affected parts of the Midwest, Great Plains, Rockies, Great Basin and Pacific Northwest. Flash flooding was reported in Oklahoma, Utah, Colorado, and South Dakota while hail pelted portions of Oregon and Washington, and tornadoes touched-down in Nevada and Idaho.

During the last half of the week, the stalled frontal system remained entrenched from the mid-Atlantic westward to the Rockies. Severe weather continued along and to the south of the front. Heavy rains drenched southeastern Virginia on Wednesday,

causing localized flooding. Some storms generated wind gusts over 60 mph from Kansas to North Carolina, downing trees and power lines while tornadoes were reported across the Midwest. In addition, lightning ignited several fires in Louisiana and North Carolina. Meanwhile, hot and muggy conditions persisted from Arkansas to South Carolina as apparent temperatures topped 105°F. Elsewhere, a low off the north Atlantic coast doused southern Maine with up to 4 inches of rain on Saturday while to the south thunderstorms dumped enough precipitation to establish a new annual rainfall record at New Orleans, LA of 85.49 inches. Farther west, heavy rain fell across parts of the Pacific Northwest while searing heat baked the Southwest. Forks, WA measured nearly 4.5 inches of rain in a 24 hour period from Wednesday to Thursday. To the south, temperatures exceeded 100°F in Arizona and California, and record highs were observed across parts of California on Friday and Saturday.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) were measured across most of the Northeast, mid-Atlantic, much of the Midwest, Ohio and Tennessee Valleys, Florida, the lower Mississippi Valley, and scattered locations across the southern half of Texas, northern Plains, central and southern Rockies, Pacific Northwest, southern Alaska, and eastern Hawaii (Table 1). Light to moderate rainfall was observed across most of the nation east of the Rockies, central Arizona, the remainder of southern Alaska, and portions of western Alaska. Little or no precipitation was recorded in the extreme northern sections of the upper Midwest and Great Lakes, the Far West, and the remainders of Alaska and the Hawaiian Islands.

Unseasonably warm conditions were confined to the northwestern and southeastern quarters of the nation (Table 2). Weekly departures between +4°F and +8°F were common across the Pacific Northwest and northern Rockies while departures up to +5°F were observed in the Southeast. Near to slightly above normal temperatures prevailed from the mid-Atlantic to eastern Texas, and across parts of southern Arizona and Alaska. In Hawaii, unusually warm conditions affected some locations with weekly departures up to +3°F recorded at both Honolulu and Molokai while near to slightly above normal temperatures prevailed elsewhere.

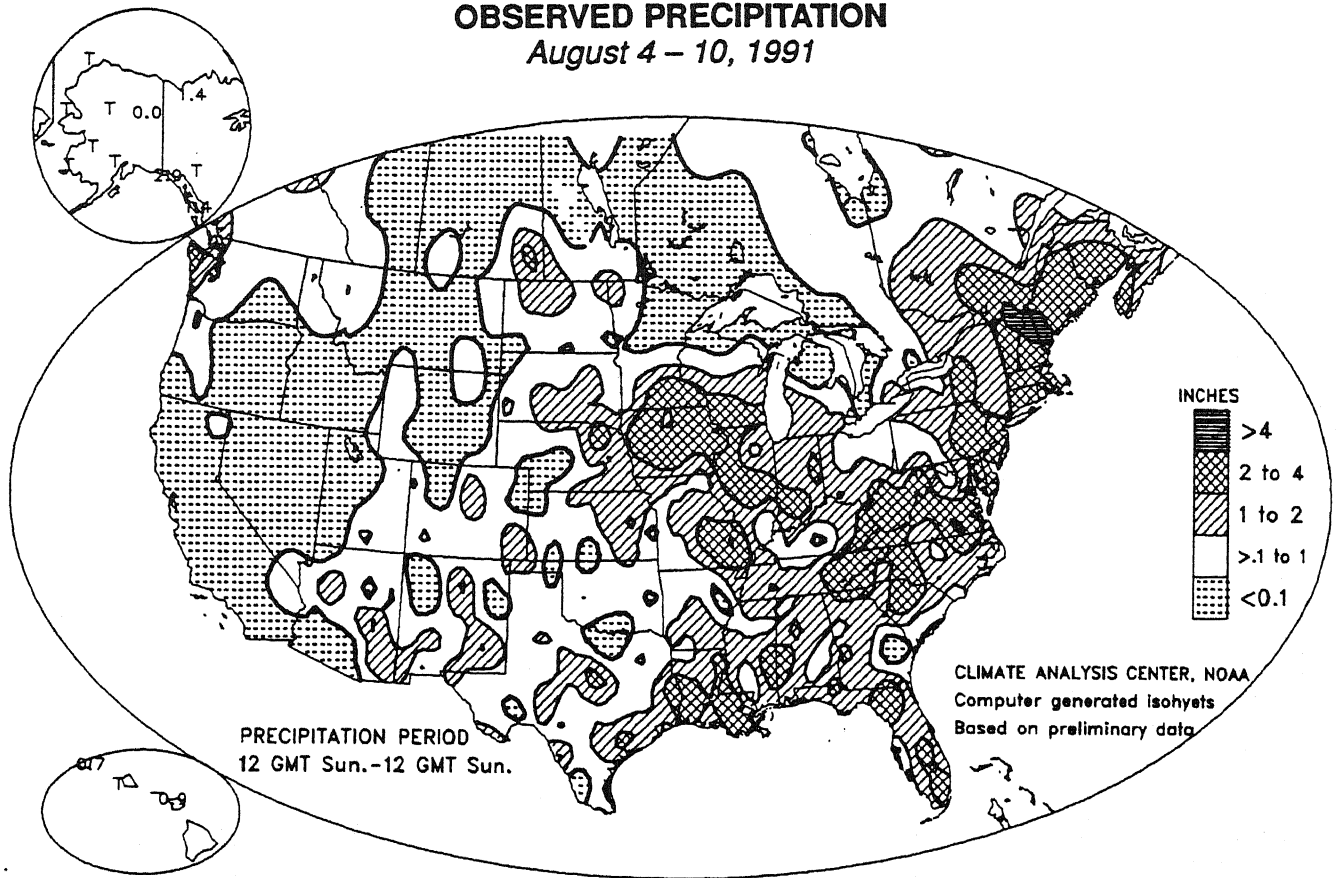
Unusually cool weather prevailed across the remainder of the U.S. with weekly departures of -4° to -8°F common from southern California coast to western New England (Table 3). Near to slightly below normal temperatures settled across parts of the southern Plains and the remainder of New England. In Alaska, cool weather dominated most of the state with departures between -5°F and -7°F in the north while near to slightly below normal readings covered the central sections.

TABLE 1. SELECTED STATIONS WITH 3.00 OR MORE INCHES OF PRECIPITATION DURING THE WEEK OF AUGUST 4 – 10, 1991

STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
HILO/LYMAN, HAWAII, HI	19.06	BATON ROUGE, LA	3.94
MT. WASHINGTON, NH	8.03	ROCHESTER, MN	3.94
QUILLAYUTE, WA	5.95	MIAMI, FL	3.74
MERIDIAN, MS	5.60	KNOXVILLE, TN	3.51
PORTLAND, ME	5.16	MONTPELIER, VT	3.31
RUMFORD, ME	4.87	BRUNSWICK NAS, ME	3.25
SALISBURY, MD	4.32	KNOB NOSTER/WHITEMAN AFB, MO	3.21
WATERLOO, IA	4.14	CHICOPEE/WESTOVER AFB, MA	3.16
DUBUQUE, IA	4.13	CAPE GIRARDEAU, MO	3.15
CROSSVILLE, TN	4.10	PATUXENT RIVER NAS, MD	3.01
COLUMBUS, GA	4.08		

OBSERVED PRECIPITATION

August 4 – 10, 1991



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

August 4 – 10, 1991

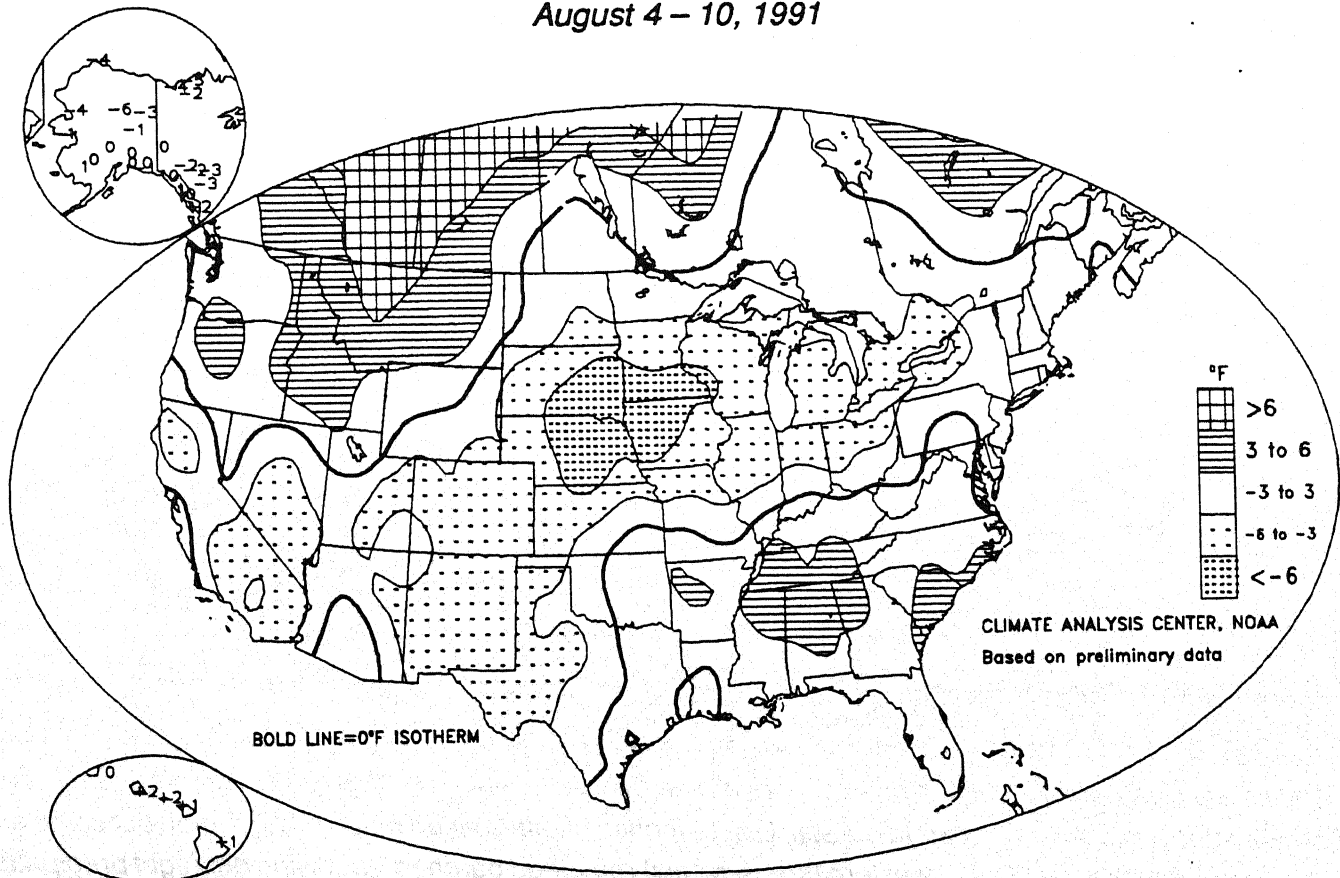


TABLE 2. SELECTED STATIONS WITH TEMPERATURES AVERAGING 4.0°F OR MORE ABOVE NORMAL FOR THE WEEK OF AUGUST 4 - 10, 1991

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
HELENA, MT	+7.4	75.3	CHARLESTON, SC	+4.7	85.4
GLASGOW, MT	+6.4	77.6	BURLEY, ID	+4.7	74.6
CUT BANK, MT	+6.4	70.4	LEWISTOWN, MT	+4.7	70.9
GREAT FALLS, MT	+6.2	75.6	CHATTANOOGA, TN	+4.6	83.5
HAVRE, MT	+6.1	76.4	BUTTE, MT	+4.6	67.4
BOISE, ID	+5.8	79.7	MUSCLE SHOALS, AL	+4.5	84.4
KALISPELL, MT	+5.6	70.9	SAVANNAH, GA	+4.4	85.7
MISSOULA, MT	+5.1	72.4	ATLANTA, GA	+4.1	83.1
EUREKA, CA	+5.1	61.9	REDMOND, OR	+4.1	69.6
BOZEMAN, MT	+4.8	71.3	BILLINGS, MT	+4.0	76.5

TABLE 3. SELECTED STATIONS WITH TEMPERATURES AVERAGING 5.5°F OR MORE BELOW NORMAL FOR THE WEEK OF AUGUST 4 - 10, 1991

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
SIOUX FALLS, SD	-8.1	65.8	FORT DODGE, IA	-6.1	67.1
WATERTOWN, SD	-7.5	63.8	JACKSON, MI	-6.0	65.3
BETTLES, AK	-6.9	50.8	NORFOLK, NE	-5.9	69.4
SPENCER, IA	-6.8	65.4	MADISON, WI	-5.8	64.9
NORTH OMAHA, NE	-6.7	70.2	MOUNT CLEMENS/SELFRIDGE, MI	-5.8	65.9
MASON CITY, IA	-6.6	65.2	PIERRE, SD	-5.8	69.8
MINNEAPOLIS, MN	-6.5	66.2	BURLINGTON, IA	-5.8	70.4
ROCHESTER, MN	-6.4	63.2	SAGINAW, MI	-5.7	64.8
GRAND ISLAND, NE	-6.4	70.2	GOODLAND, KS	-5.6	69.8
LA CROSSE, WI	-6.2	66.5	BAKERSFIELD, CA	-5.6	77.9
HURON, SD	-6.2	67.8	GRAND RAPIDS, MI	-5.5	65.9
VALENTINE, NE	-6.2	68.1	OMAHA/EPPLEY, NE	-5.5	71.6

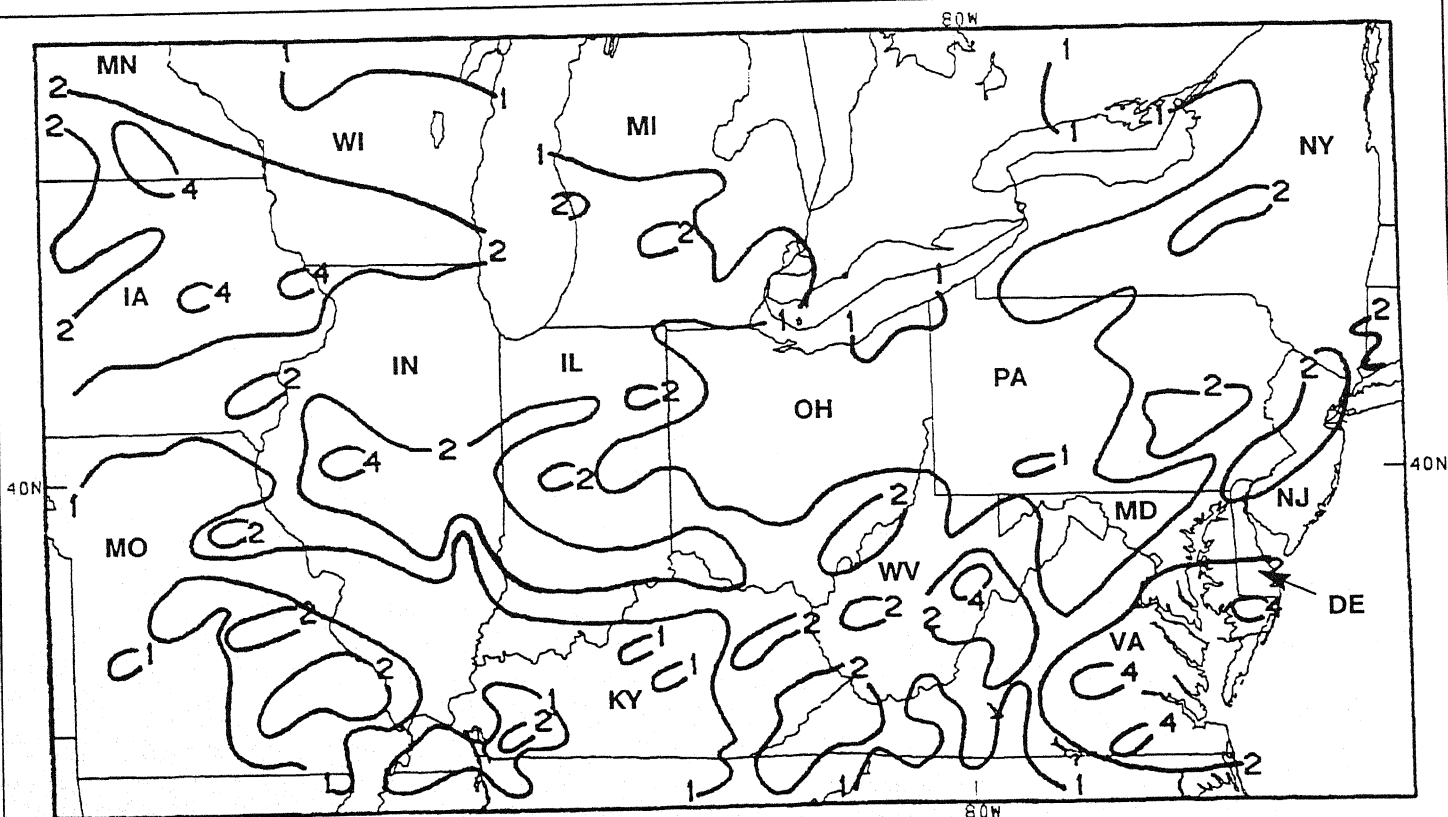
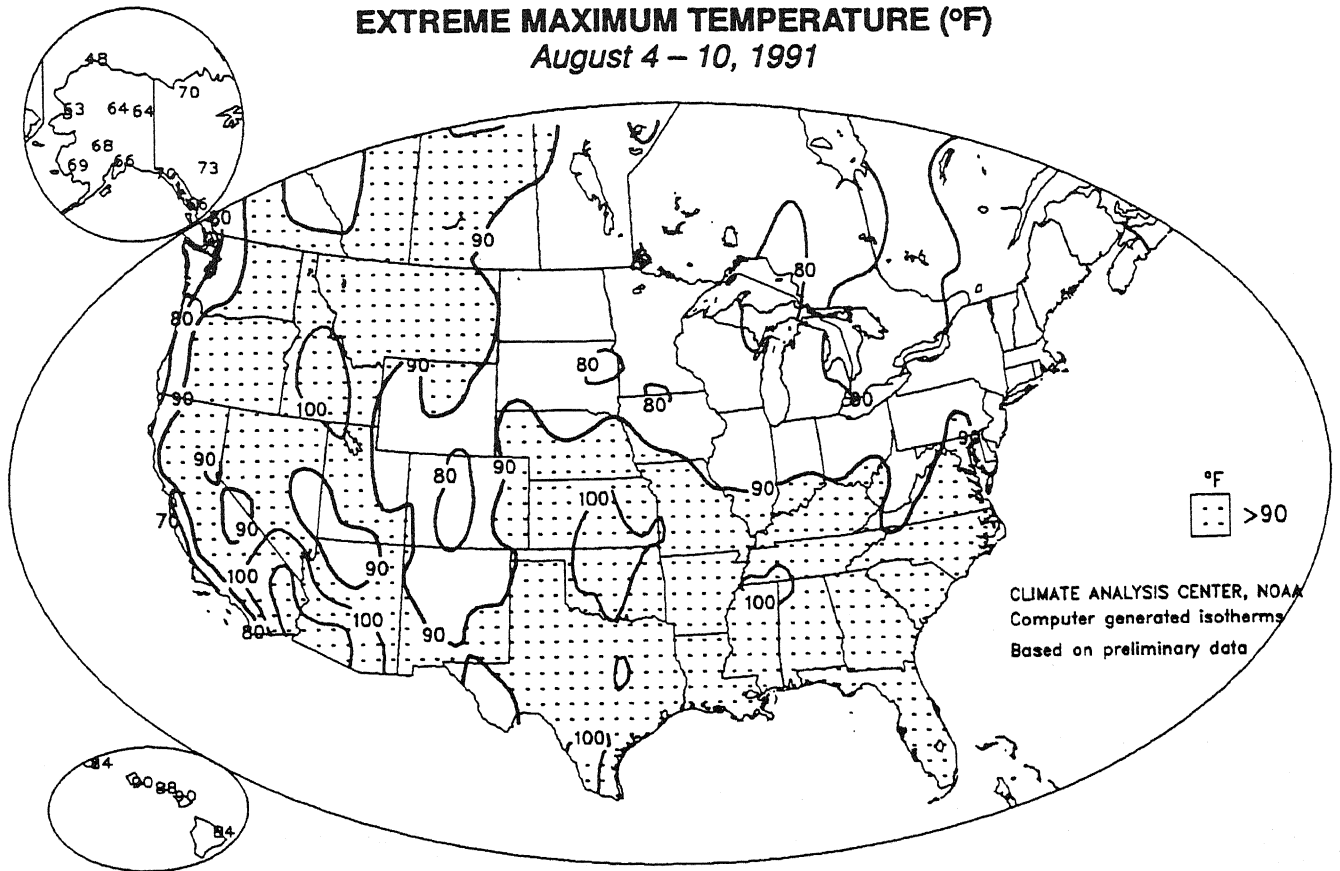


FIGURE 1. Total Precipitation Across the Midwestern and East-Central States, August 4-10, 1991. Isohyets are drawn for 1, 2, and 4 inches. Showers and thunderstorms brought much needed rain from the Corn Belt to the mid-Atlantic coast last week. Over 2 inches of rain soaked much of the region but some areas (most notably northern Ohio and western Pennsylvania) remained parched, receiving only light precipitation.

EXTREME MAXIMUM TEMPERATURE (°F)

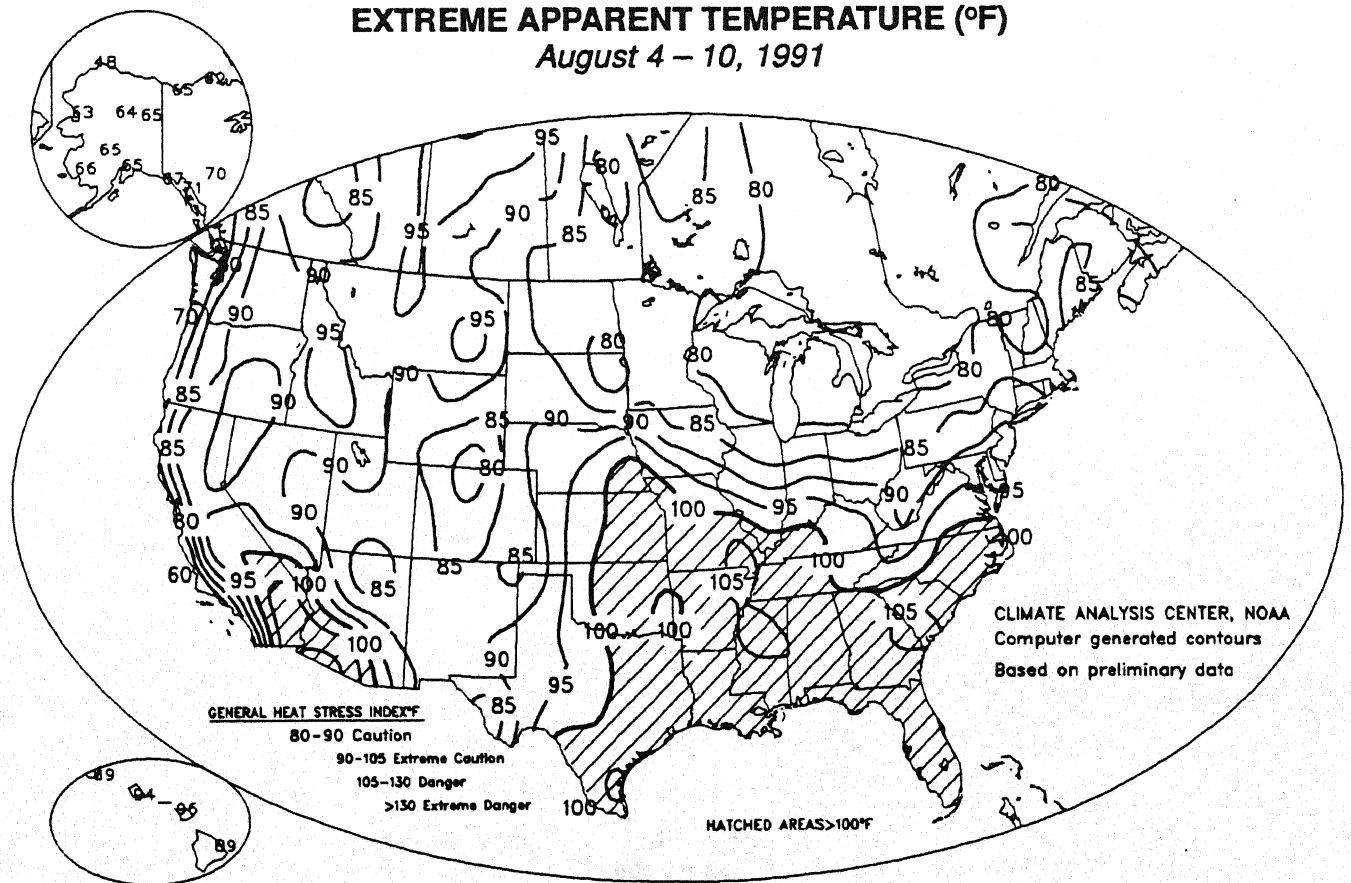
August 4 – 10, 1991



Triple digit readings were limited to portions of the lower Mississippi Valley, Central Plains, lower Rio Grande Valley, northern Intermountain West, and the desert Southwest (top). High apparent temperatures greater than 105°F were observed in the lower Mississippi Valley, Southeast, and desert Southwest (bottom).

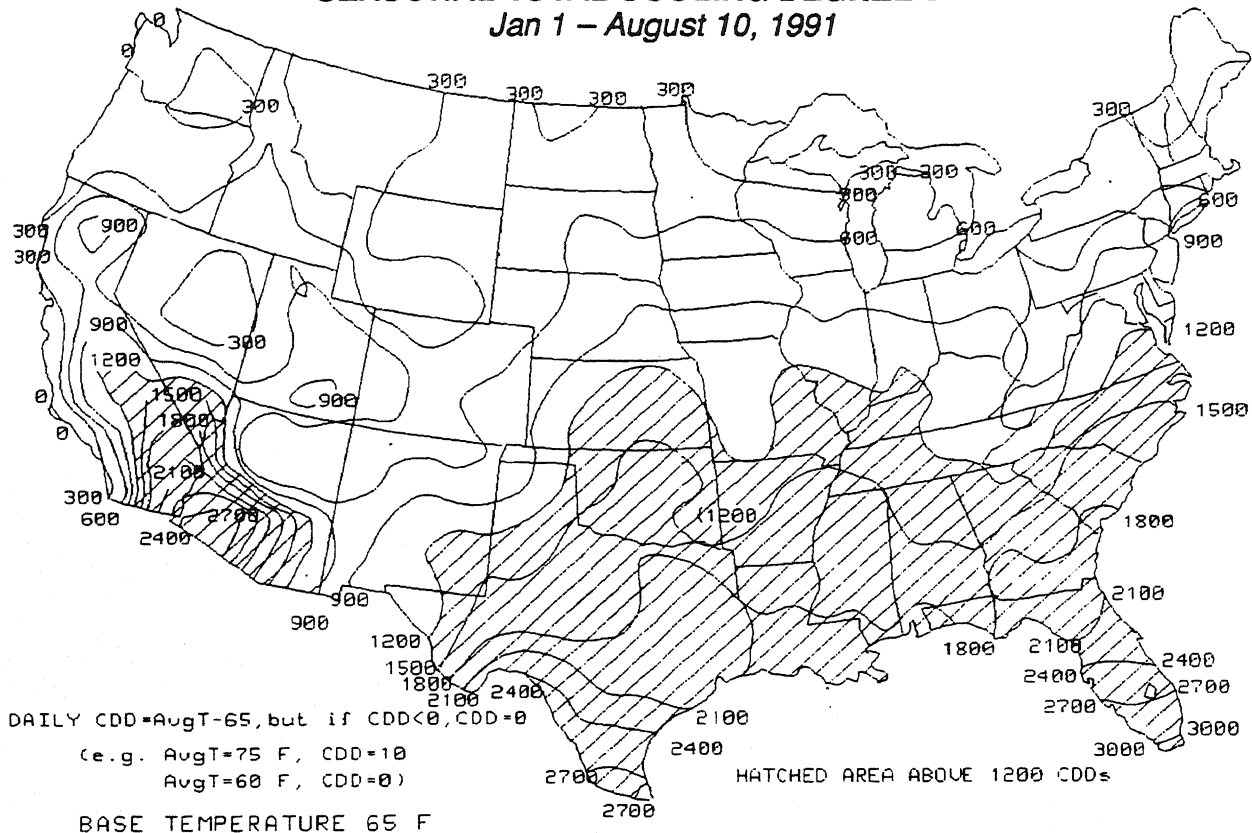
EXTREME APPARENT TEMPERATURE (°F)

August 4 – 10, 1991



SEASONAL TOTAL COOLING DEGREE DAYS

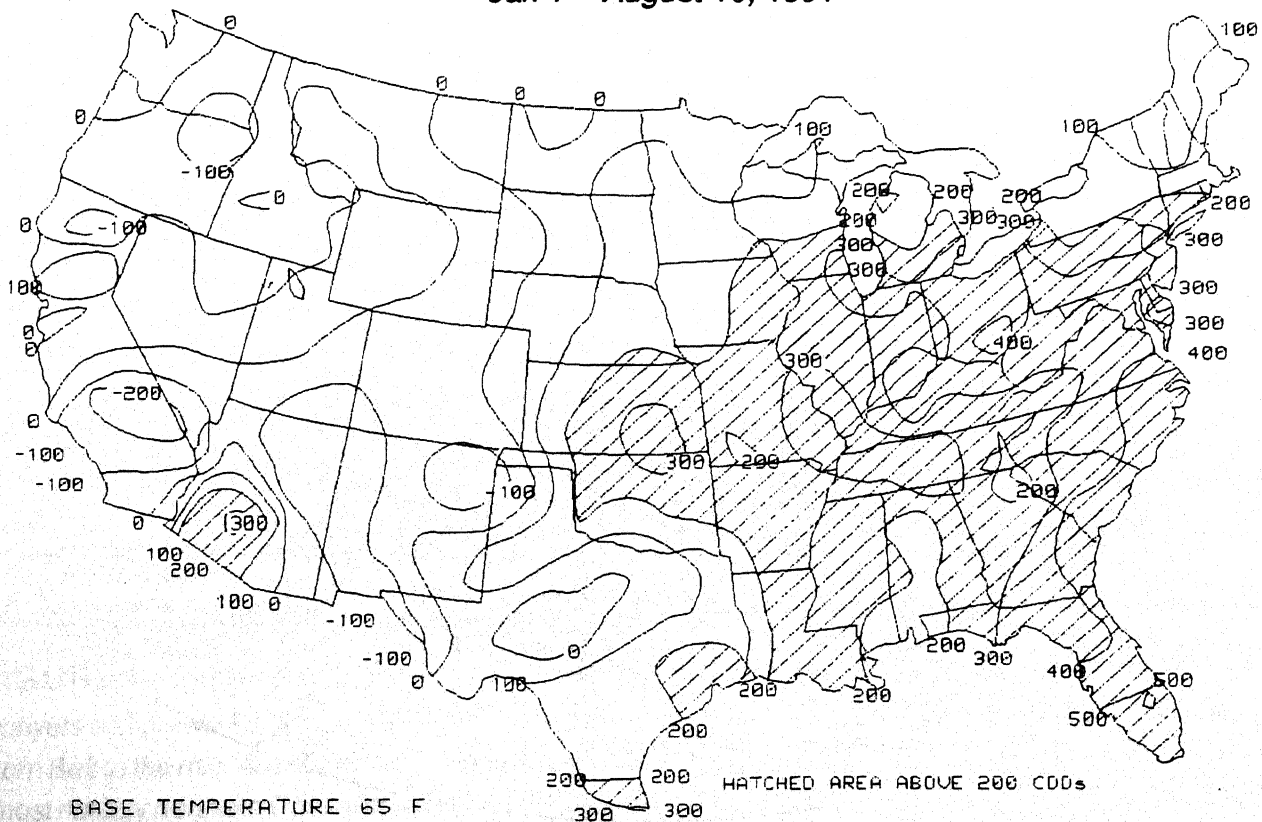
Jan 1 – August 10, 1991

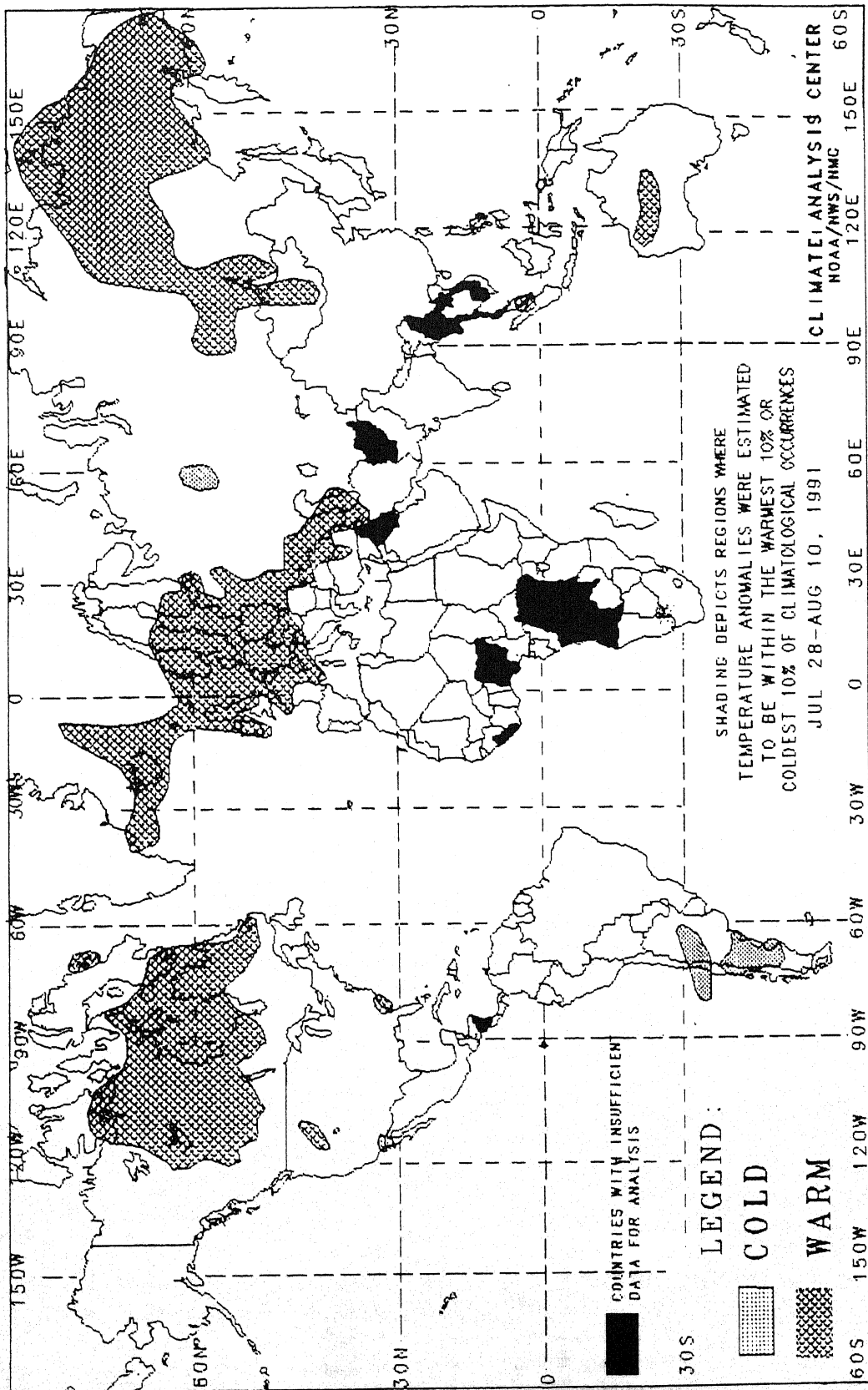


Unseasonably warm weather since the beginning of the year produced significant cooling usage (>1000 CDD's) in the southern tier of states (top). The unusually warm conditions across much of the eastern U.S. resulted in above normal cooling demand from the Great Plains to the East Coast, while cool weather generated below normal cooling demand in the West (bottom).

ACCUMULATED DEPARTURE FROM NORMAL CDD (SEASONAL)

Jan 1 – August 10, 1991





The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

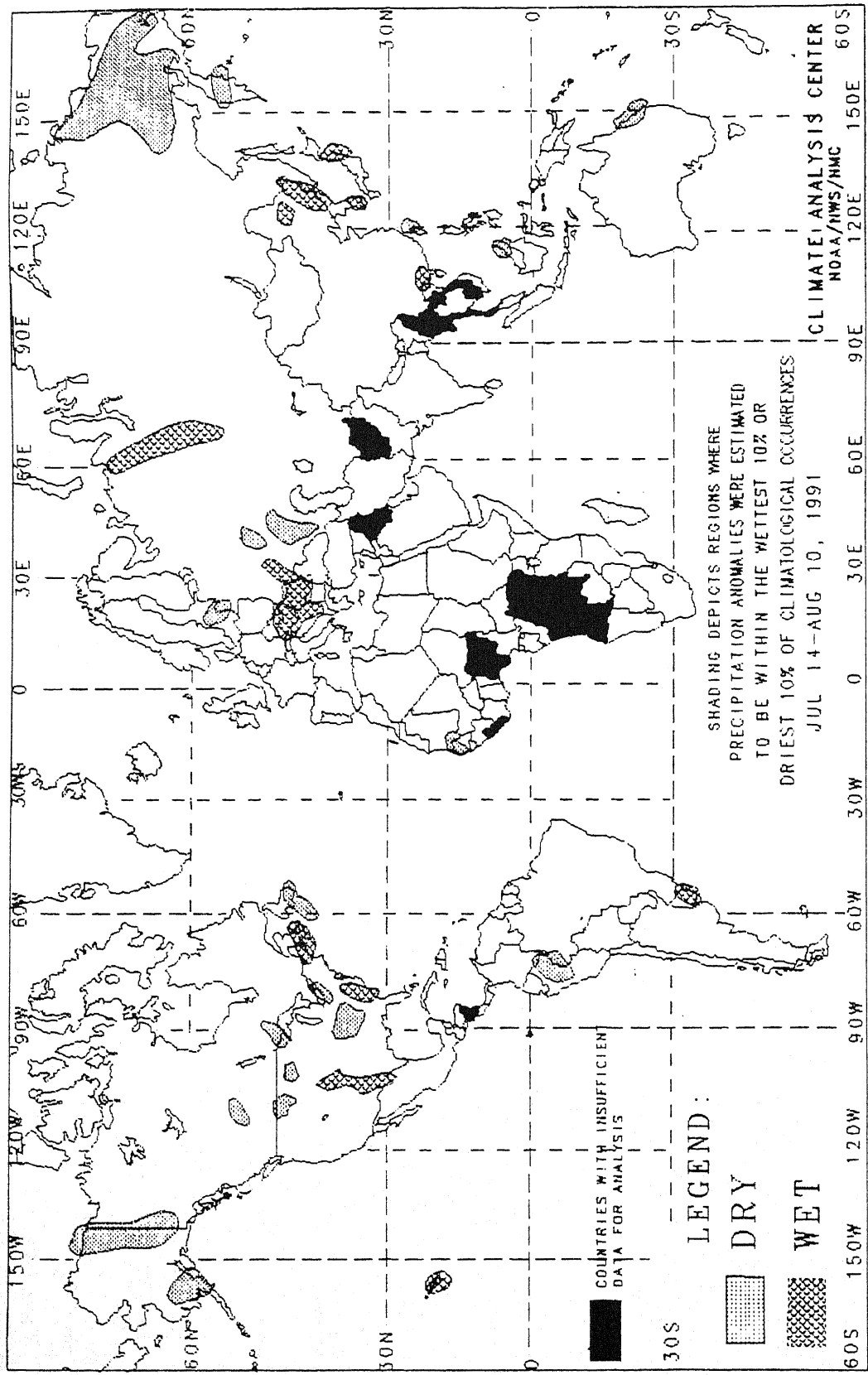
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

4-WEEK GLOBAL PRECIPITATION ANOMALIES

JULY 14 - AUGUST 10, 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

UNITED STATES MONTHLY CLIMATE SUMMARY

JULY 1991

Hot, muggy, and wet weather prevailed during July from the central and eastern Gulf Coast to the southern mid-Atlantic. Severe thunderstorms caused localized flooding, with over 12 inches of rain across parts of the region. Columbia, SC was deluged with 17.46 inches, their wettest month on record. The Southeast region has observed the wettest January-July period on record in 1991. Only five years ago the region endured the driest such period (Figure 1). Mid-summer monsoon rains also brought localized flooding and unusually heavy and widespread rains to the central and southern Rockies and southern High Plains where some locations received 2 to 5 times their normal July rainfall (Figure 2, Table 1). Frequent thunderstorms erupted across the southern Plains and upper Mississippi Valley and Great Lakes while infrequent but intense thunderstorms doused parts of the middle Mississippi Valley during the first half of the month. Predominantly dry and hot weather intensified drought conditions in parts of the northern Plains and from the central Plains eastward across the Corn Belt and into the Northeast and mid-Atlantic (Table 2). Most of the western and central Corn Belt was extremely dry, receiving much less than half the normal monthly rain which stressed corn and soybeans. Seasonably dry and warm conditions dominated most of the West. Unusual summer rains, however, fell on parts of the Far West, where the July rainfall record was broken in typically dry Los Angeles and San Diego.

Early in July, searing heat baked a large portion of the country, particularly in the West where highs routinely climbed into triple digits in interior California. Readings also topped the century mark in the Rockies and Great Plains. Farther east, high humidities combined with the heat to create oppressive conditions across the South, Midwest, and mid-Atlantic. The muggy conditions that gripped the eastern half of the nation fueled severe thunderstorms that generated brief but intense rainfall that generated localized flooding, hail, and tornadoes. Torrential rains caused flooding across southern Texas early in the month and in northeastern Missouri, central Kentucky, and central New Jersey toward the middle of the month. Cool air settled across Alaska, replacing the abnormally warm weather that enveloped the state during June and the first part of July. Anchorage, AK marked 12 consecutive days with rain, including an abnormally large number of days (5) with thunderstorms.

At mid-month, the eastern two-thirds of the country continue to swelter in hot and sultry conditions. Blistering heat scorched the Great Plains as temperatures soared to 104°F at Bismarck, ND. Hot and dry conditions continued to parch the Northeast, mid-Atlantic, Ohio Valley, Corn Belt, and central Plains. In contrast, unseasonably cool air prevailed in the Pacific Northwest. Severe thunderstorms rumbled across the South, generating heavy rain. Intense downpours also caused flooding in the southern High Plains. During the latter part of the month, cool air moved into the central states while dry conditions persisted from the central Plains to the Northeast. The Pennsylvania government issued a "drought warning" for the Susquehanna and Potomac river basins. Farther south, however, heavy rains due to a stalled frontal system and a weak tropical disturbance inundated the southern Atlantic states. Up to 7 inches of rain deluged Rockridge, NC in 3 1/2 hours. Rare summer showers and

thunderstorms moved across southern California, knocking out power and creating flash floods. Cooler weather generally prevailed from the Intermountain West to the Atlantic Coast at month's end.

According to the River Forecast Centers, the greatest monthly totals (more than 10 inches) were reported in a broad area along the central and eastern Gulf Coast northward into the central Appalachians and the southern mid-Atlantic (Table 1). Scattered heavy amounts were reported in northeastern Texas and southwestern Arkansas. Heavy rain was also widespread across the southern and central Rockies, the southern Plains, northeastern Missouri, eastern Kentucky, along the mid-Atlantic Seaboard, and from the upper Mississippi Valley to the Great Lakes (Figure 2). Above normal precipitation also covered portions of the usually dry Far West. Regionally, only the Southeast and West ranked in the upper third of the historical distribution for July (page 11). Three states (FL, LA, and MS) had the wettest January-July period during 1991 while five others (AL, GA, MN, SD, and WI) recorded one of the ten wettest such periods (page 18).

Abnormally dry conditions (less than 75% of normal) covered much of the northern Plains, western and central Corn Belt, and portions of the central Plains, middle and lower Mississippi and Ohio Valleys, mid-Atlantic, and Northeast (page 13). Parts of these areas were extremely dry, receiving less than half the normal July rainfall. Seasonably dry weather prevailed over much of the West and northern and central Alaska. Regionally, the Central, Northeast, and West-North Central had their 10th, 15th and 16th driest Julys on record. Nationally, 1991 ranked as having the 27th driest July on record (page 10). For the first seven months of the year, four states (MD, OH, NH, and PA) recorded one of the ten driest January-July periods since 1895 (page 18).

Temperatures averaged near to above normal across much of the country as hot spells were offset by periods of relatively cool weather. Warm weather, however, persisted throughout the first three weeks of the month in the eastern quarter of the nation as temperatures averaged 2°F to 4°F above normal (Figures 3 and 4, Table 3). July departures exceeded +2°F in portions of the Intermountain West due to abnormally warm weather during the latter part of the month. Nationally, temperatures averaged above the long-term mean, ranking as the 37th warmest July on record (page 10). Regionally, the Northeast, Central, Southeast, and West ranked in the upper third of the historical distribution for July (page 11). For the nation as a whole, the year so far has been unusually warm, with the January-July period ranking as the 7th warmest such period on record (page 17). Not surprisingly, thirty states have experienced one of the top ten warmest January-July periods this year.

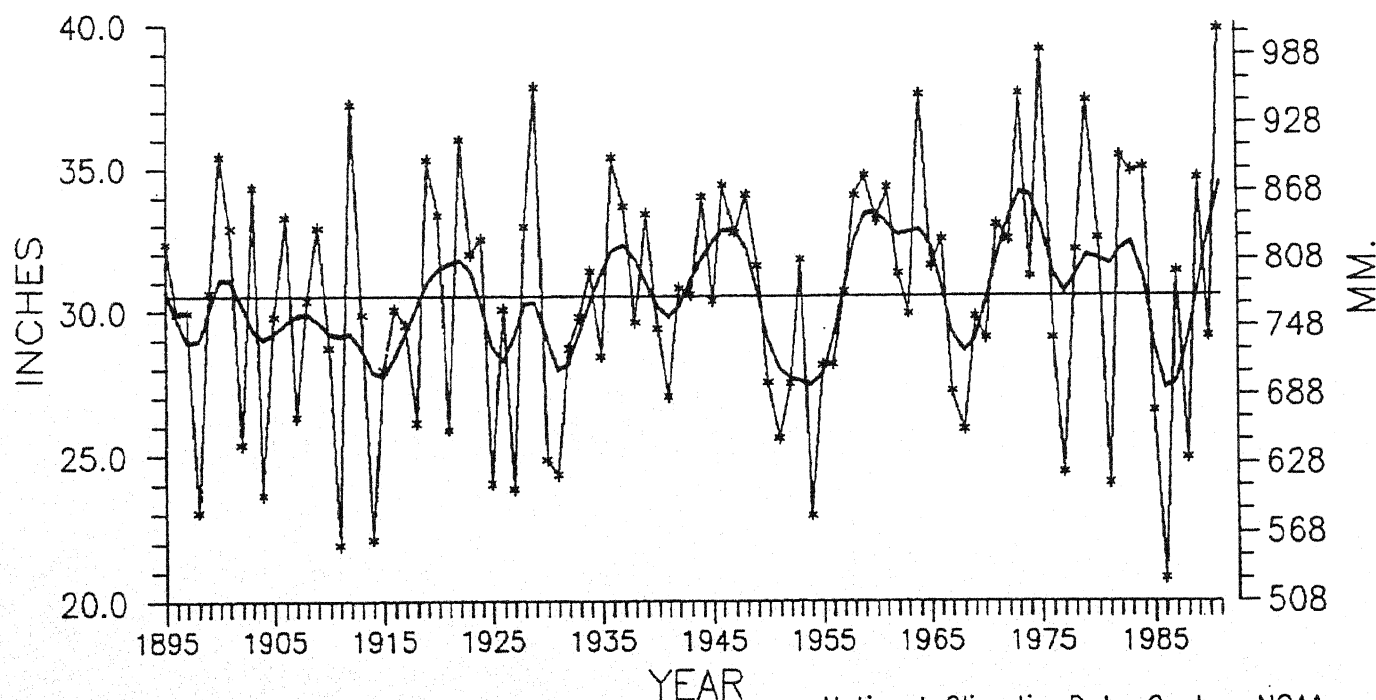
Subnormal July temperatures (more than 2°F below) were limited to the southern and central Rockies, southern High Plains, and southern California. Departures less than -4°F were observed only in the southern High Plains where cloud cover has been thick due to an active summer monsoon (Table 4). Regionally, only the Southwest, East-North Central and Northwest ranked in the lower (colder) half of the historical distribution.

TABLE 1. SELECTED STATIONS WITH 150% OR MORE OF THE NORMAL PRECIPITATION AND 7.00 INCHES OR MORE PRECIPITATION; OR, STATIONS WITH 10.00 INCHES OR MORE PRECIPITATION AND NO NORMALS DURING JULY 1991.

<u>STATION</u>	<u>TOTAL (INCHES)</u>	<u>PCT. OF NORMAL</u>	<u>STATION</u>	<u>TOTAL (INCHES)</u>	<u>PCT. OF NORMAL</u>
COLUMBIA, SC	17.46	326.4	SUMTER/SHAW AFB, SC	10.23	194.5
APALACHICOLA, FL	17.34	244.6	NEW ORLEANS/LAKE FRONT, LA	10.06	***
JACKSONVILLE, FL	15.90	249.2	VERO BEACH, FL	9.83	170.7
SAVANNAH, GA	15.41	208.8	FLORENCE, SC	9.65	169.6
FORT MYERS, FL	14.47	168.8	MELBOURNE, FL	9.33	166.9
YAKUTAT, AK	14.33	173.5	CLOVIS/CANNON AFB, NM	9.02	312.1
GOLDSBORO/JOHNSON AFB, NC	14.26	209.7	CAPE HATTERAS, NC	8.58	160.4
WILMINGTON, NC	13.35	179.4	MIDLAND, TX	8.50	500.0
NEW ORLEANS/MOISANT, LA	13.15	196.0	ELKINS, WV	8.34	163.9
DAYTONA BEACH, FL	11.97	216.8	ANNETTE ISLAND, AK	8.15	173.8
JACKSONVILLE NAS, FL	11.46	***	VICTORIA, TX	7.90	306.2
AUGUSTA, GA	11.12	253.9	LA CROSSE, WI	7.67	204.0
JACKSONVILLE/CECIL FIELD NAS, FL	11.04	***	ROSWELL, NM	7.53	442.9
NEW ORLEANS NAS, LA	10.46	***	ROANOKE, VA	7.22	210.5
RALEIGH-DURHAM, NC	10.27	235.0			

NOTE: Stations without precipitation normals are indicated by asterisks.

SOUTHEAST REGION PRECIPITATION JANUARY-JULY, 1895-1991



National Climatic Data Center, NOAA

FIGURE 1. January - July Precipitation Averaged Across the Southeast Region, 1895 - 1991. *This year, the Southeast region as a whole experienced the wettest such period on record. Only five years ago (1986) the Southeast recorded the driest January - July period ever.*

TABLE 2. SELECTED STATIONS WITH 40% OR LESS OF THE NORMAL PRECIPITATION AND NORMAL PRECIPITATION OF 3.00 INCHES OR MORE DURING JULY 1991.

STATION	TOTAL (INCHES)	PCT. OF NORMAL	NORMAL (INCHES)	STATION	TOTAL (INCHES)	PCT. OF NORMAL	NORMAL (INCHES)
DODGE CITY, KS	0.22	7.2	3.06	LAFAYETTE, IN	0.95	23.9	3.98
TULSA, OK	0.35	10.0	3.49	CARIBOU, ME	0.96	23.9	4.02
PEORIA, IL	0.35	8.8	3.99	JAMESTOWN, ND	1.08	35.8	3.02
MOLINE, IL	0.41	8.4	4.86	DES MOINES, IA	1.14	35.6	3.20
TOLEDO, OH	0.52	16.3	3.19	NORFOLK, NE	1.19	37.3	3.19
SALINA, KS	0.54	16.3	3.31	DETROIT, MI	1.23	39.9	3.08
CEDAR RAPIDS, IA	0.56	12.8	4.38	RUSSELL, KS	1.23	37.2	3.31
AKRON, OH	0.67	16.8	4.00	EL DORADO, AR	1.28	32.7	3.91
MARTINSBURG, WV	0.71	21.7	3.27	HOUSTON, TX	1.31	36.7	3.57
SIOUX CITY, IA	0.77	22.9	3.36	CHICAGO/O'HARE, IL	1.32	40.0	3.30
OTTUMWA, IA	0.78	17.6	4.42	SOUTH BEND, IN	1.32	36.2	3.65
ROCKFORD, IL	0.79	17.6	4.48	JACKSON, TN	1.43	32.2	4.44
BURLINGTON, IA	0.82	22.7	3.62	TOPEKA, KS	1.47	36.3	4.05
CONCORDIA, KS	0.86	25.5	3.37	MORGANTOWN, WV	1.48	37.1	3.99
DUBUQUE, IA	0.87	20.1	4.33	WATERLOO, IA	1.60	34.2	4.68

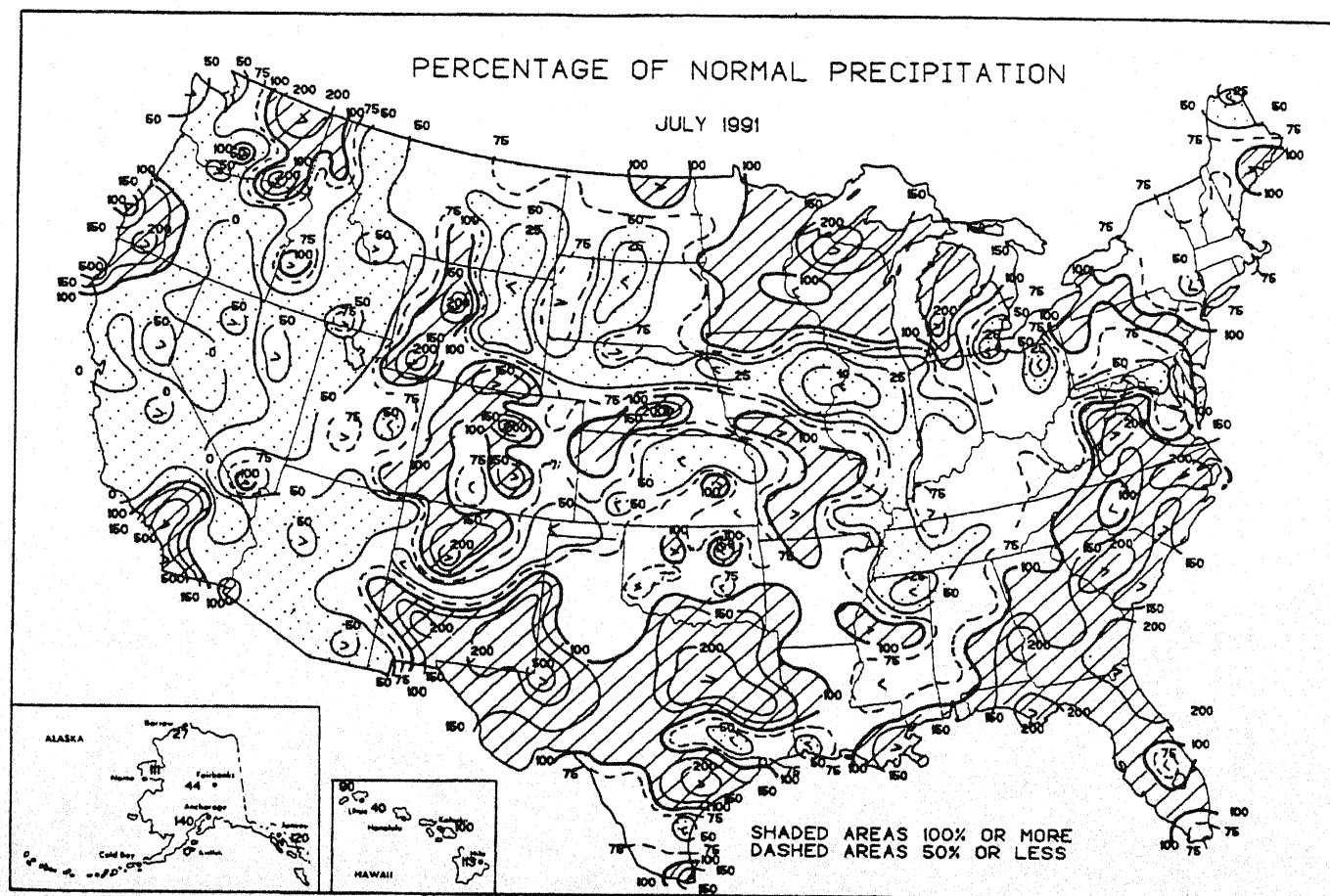


FIGURE 2. July 1991 Percent of Normal Precipitation. Isopleths drawn for 0,25,50,75,100,150,200 and 500 percent. More than five times the normal rainfall for July was measured across coastal southern California and extreme coastal northern California, and west-central Texas. Amounts exceeding twice the monthly normal were reported in portions of the Pacific Northwest, central and southern Rockies, central and southern Plains, the Gulf Coast, the Southeast, and mid-Atlantic. In contrast, less than half the normal rainfall occurred in extreme southern New England, the eastern Ohio Valley, Tennessee Valley, much of the Corn Belt, and parts of the central and northern Rockies, Great Basin, Far West, northern and central Alaska, and parts of the Hawaiian Islands.

TABLE 3. JULY 1991 AVERAGE TEMPERATURE 3.0°F OR MORE ABOVE NORMAL.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
RENO, NV	+4.9	74.3	CAPE HATTERAS, NC	+3.4	81.7
NOME, AK	+4.5	55.0	CHARLESTON, WV	+3.4	77.9
SALINA, KS	+4.2	85.0	ZANESVILLE, OH	+3.4	75.9
FT LAUDERDALE/HOLLYWOOD, FL	+4.0	86.2	WILLIAMSPORT/LYCOMI, PA	+3.3	75.8
NEW BERN, NC	+4.0	83.2	HUNTINGTON, WV	+3.2	79.0
AKRON, OH	+4.0	75.6	SOUTH BEND, IN	+3.2	75.7
BECKLEY, WV	+4.0	73.4	PITTSBURGH, PA	+3.2	75.4
MILWAUKEE, WI	+3.8	74.5	BOZEMAN, MT	+3.2	69.1
CHARLOTTE, NC	+3.6	82.2	MEDICINE LODGE, KS	+3.1	84.6
NORFOLK, VA	+3.6	82.0	CONCORDIA, KS	+3.1	82.4
LOUISVILLE/STANDIFORD, KY	+3.6	81.3	HARRISBURG, PA	+3.1	78.7
COLUMBUS, OH	+3.6	77.5	MARTINSBURG, WV	+3.1	78.1
ERIE INTL, PA	+3.6	73.2	HELENA, MT	+3.1	70.9
VICTORVILLE/GEORGE AFB, CA	+3.4	82.0			

TEMPERATURE PERCENTILES 1 JUL 91 THRU 31 JUL 91

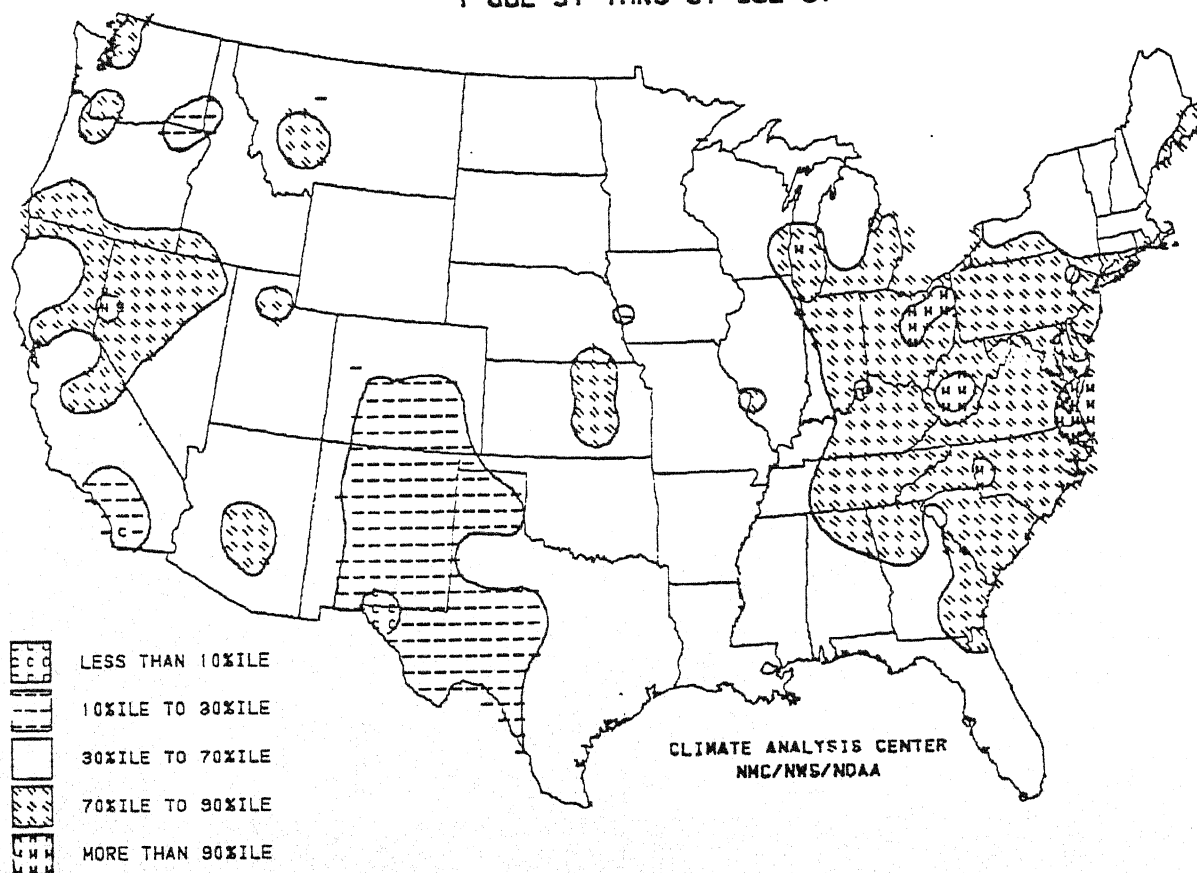


FIGURE 3. July 1991 Temperature Percentiles. Significant July warmth [$>70\%$ ile] was observed across a large portion of the East, Ohio Valley, Great Basin, and parts of the Pacific Northwest, Southwest and central Plains with some areas in the Appalachians and Ohio Valley ranking in the upper (warm) 10% climatologically. In contrast, much of the central and southern Rockies, Rio Grande Valley, southern California and northern Intermountain West recorded unusual July coolness [$<30\%$ ile] with extreme western Texas finishing in the lower (cold) 10% of climatological occurrences.

TABLE 4. JULY 1991 AVERAGE TEMPERATURE 2.0°F OR MORE BELOW NORMAL.

<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)	<u>STATION</u>	<u>DEPARTURE</u> (°F)	<u>AVERAGE</u> (°F)
TUCUMCARI, NM	-5.2	74.2	THERMAL, CA	-2.6	89.4
EL PASO, TX	-4.1	78.6	LARAMIE, WY	-2.5	61.9
WINSLOW, AZ	-3.8	74.8	MIDLAND, TX	-2.5	79.2
CARLSBAD, NM	-3.5	79.1	LA JUNTA, CO	-2.4	76.8
BLYTHE, CA	-3.5	91.7	BURBANK/HOLLYWOOD, CA	-2.3	71.3
DEMING, NM	-3.3	76.6	PENDLETON, OR	-2.3	71.4
DALHART, TX	-3.2	74.4	AMARILLO, TX	-2.3	76.5
GULKANA, AK	-3.1	54.3	SAN ANGELO, TX	-2.3	81.5
WINK, TX	-3.1	80.4	LOS ANGELES, CA	-2.2	66.9
SAN DIEGO/LINDBERGH, CA	-2.9	67.5	ALBUQUERQUE, NM	-2.2	76.8
TRUTH OR CONSEQUENCES, NM	-2.9	76.5	BIG DELTA, AK	-2.1	58.0
IMPERIAL, CA	-2.9	89.2	TRINIDAD, CO	-2.1	71.8
LONG BEACH, CA	-2.6	70.6			

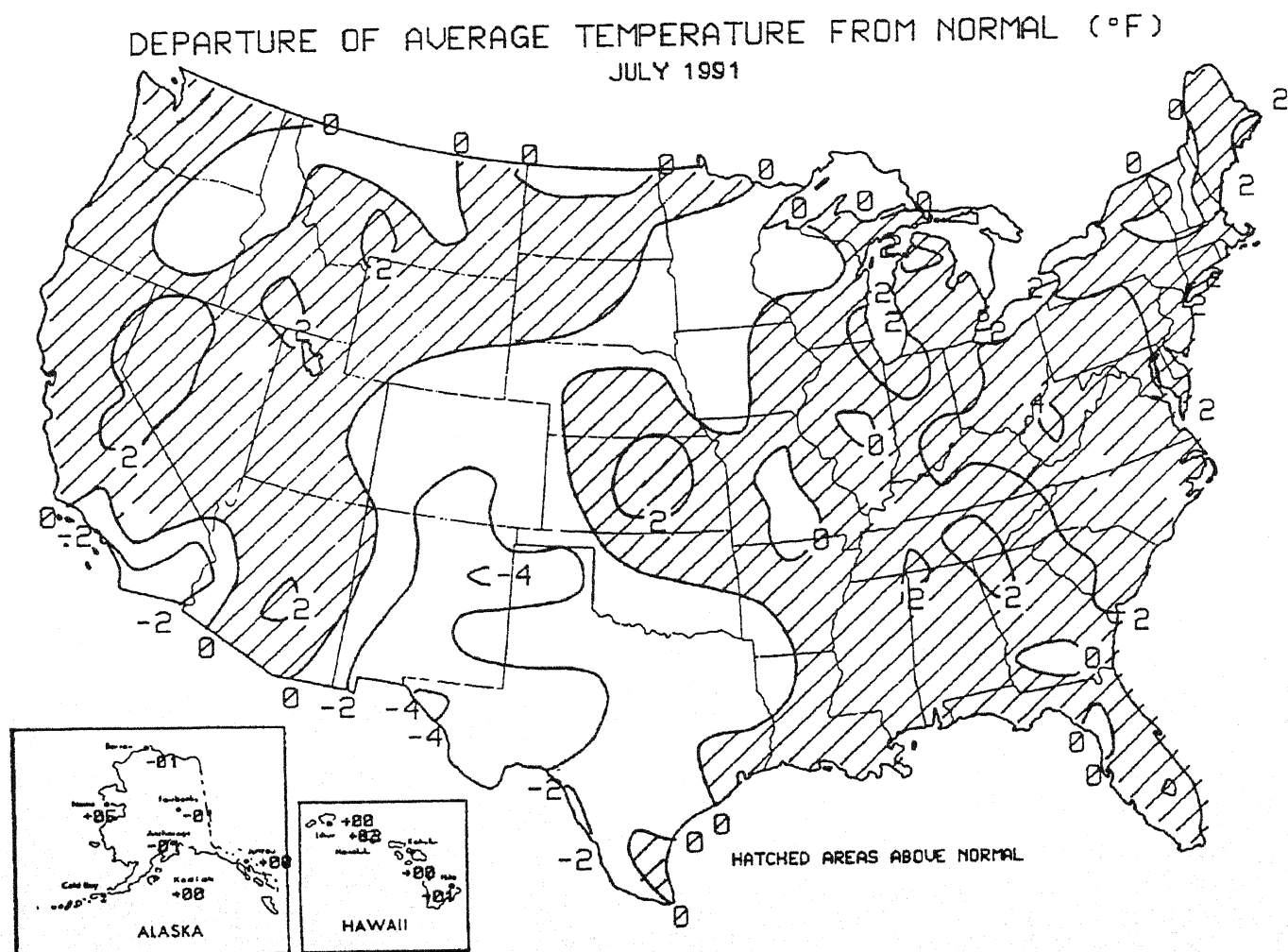


FIGURE 4. July 1991 Departure of Average Temperature from Normal (°F). *Isopleths drawn only for -4°F, -2°F, 0°F, 2°F and 4°F. Slightly warmer than normal conditions engulfed most of the eastern and western U.S. in July. Monthly departures over +2°F were reported in most of the upper Ohio Valley and mid-Atlantic, and portions of the Great Lakes, the Southeast, central Plains, and Great Basin. Below normal conditions were limited to a small slice of the nation's midsection and extreme southwest with departures of -2°F and lower confined to portions of the southern Rockies, upper Rio Grande Valley, Texas High Plains, and southern California.*

TABLE 5. RECORD JULY PRECIPITATION.

<u>STATION</u>	<u>TOTAL</u> (INCHES)	<u>NORMAL</u> (INCHES)	<u>PCT. OF</u> <u>NORMAL</u>	<u>RECORD</u> <u>TYPE</u>	<u>RECORDS</u> <u>BEGAN</u>
Columbia, SC	17.46	5.35	326.4	ALL-TIME HIGHEST	1887
New Orleans/Moisant, LA	13.15	6.17	196.0	HIGHEST	1851
Raleigh-Durham, NC	10.27	4.37	235.0	HIGHEST	1947
Midland, TX	8.50	1.70	500.0	HIGHEST	1947
Roswell, NM	7.53	1.70	442.9	HIGHEST	1951
Marquette, MI	5.40	3.21	168.2	HIGHEST	1979
Sacramento, CA	1.89	0.05	3780.0	HIGHEST	1851
San Diego/Lindbergh, CA	0.23	0.01	2300.0	HIGHEST	1940
Los Angeles, CA	0.17	0.00	∞	HIGHEST	1947
Caribou, ME	0.96	4.02	23.9	LOWEST	1947
Dubuque, IA	0.87	4.33	20.1	LOWEST	1951
Rockford, IL	0.79	4.48	17.6	LOWEST	1951
Akron, OH	0.67	4.00	16.8	LOWEST	1944
Toledo, OH	0.52	3.19	16.3	LOWEST	1951
Moline, IL	0.41	4.86	8.4	LOWEST	1947
Casper, WY	0.09	1.04	8.7	LOWEST	1940

NOTE: Trace precipitation is considered ZERO precipitation. Stations with no precipitation are only included if normal precipitation is 0.25 inches or more.

TABLE 6. RECORD JULY AVERAGE TEMPERATURES.

<u>STATION</u>	<u>AVERAGE</u> (°F)	<u>NORMAL</u> (°F)	<u>DEPARTURE</u> (°F)	<u>RECORD</u> <u>TYPE</u>	<u>RECORDS</u> <u>BEGAN</u>
Beckly, WV	73.4	69.4	+4.0	HIGHEST	1951
Cape Hatteras, NC	81.7	78.3	+3.4	HIGHEST	1875

TABLE 7. RECORD JULY EXTREME TEMPERATURES.

<u>STATION</u>	<u>EXTREME</u> (°F)	<u>DATE</u>	<u>RECORD</u> <u>TYPE</u>	<u>RECORDS</u> <u>BEGAN</u>
Fresno, CA	112	July 5	HIGHEST	1940
Pocatello, ID	102	July 13	HIGHEST	1950
Providence, RI	102	July 21	ALL-TIME HIGHEST	1954
South Bend, IN	101	July 22	HIGHEST	1939
Seattle-Tacoma, WA	99	July 23	HIGHEST	1945
Caribou, ME	95	July 20	HIGHEST	1939

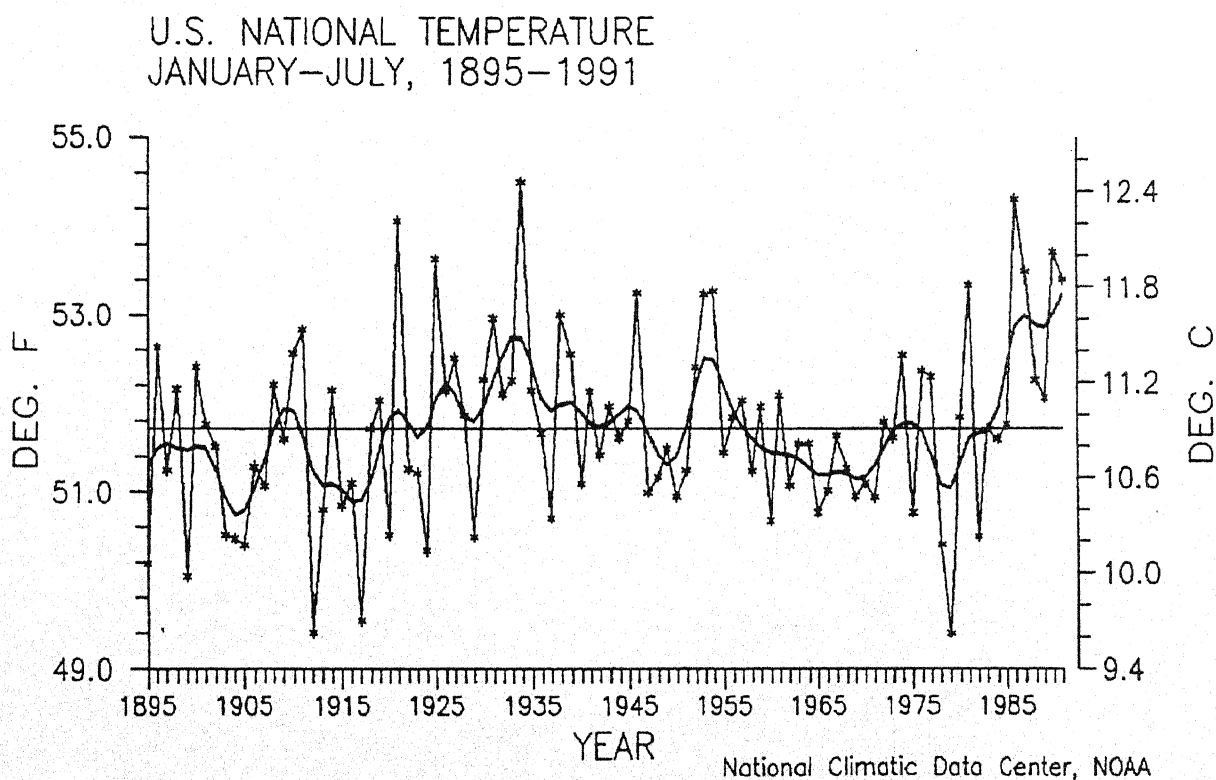
TEMPERATURE RANKINGS FOR JAN-JULY 1991, BASED ON THE PERIOD 1895 TO 1991. 1 = COLDEST AND 97 = WARMEST.

<i>STATE</i>	<i>RANK</i>	<i>STATE</i>	<i>RANK</i>	<i>STATE</i>	<i>RANK</i>	<i>STATE</i>	<i>RANK</i>
AL	71	IA	89	NE	90	RI	96
AZ	50	KS	94	NV	45	SC	92
AR	85	KY	96	NH	95	SD	91
CA	40	LA	74	NJ	96	TN	90
CO	74	ME	79	NM	48	TX	70
CT	97	MD	97	NY	95	UT	35
DE	95	MA	95	NC	95	VT	94
FL	97	MI	95	ND	95	VA	97
GA	80	MN	94	OH	96	WA	52
ID	59	MS	78	OK	91	WV	95
IL	95	MO	91	OR	38	WI	94
IN	96	MT	78	PA	96	WY	83

National Climatic Data Center

Top 10 rankings : **BOLD**

Bottom 10 rankings : *Italics*



January - July Nationally Averaged Temperatures, 1895-1991, as Computed by the National Climatic Data Center. *The first seven months of the year has been unusually warm, ranking as 7th warmest January - July period on record. January - July temperatures have averaged near to much above normal for the last nine years.*

PRECIPITATION RANKINGS FOR JAN–JULY 1991, BASED ON THE PERIOD 1895 TO 1990. 1 = DRIEST, 97 = WETTEST.

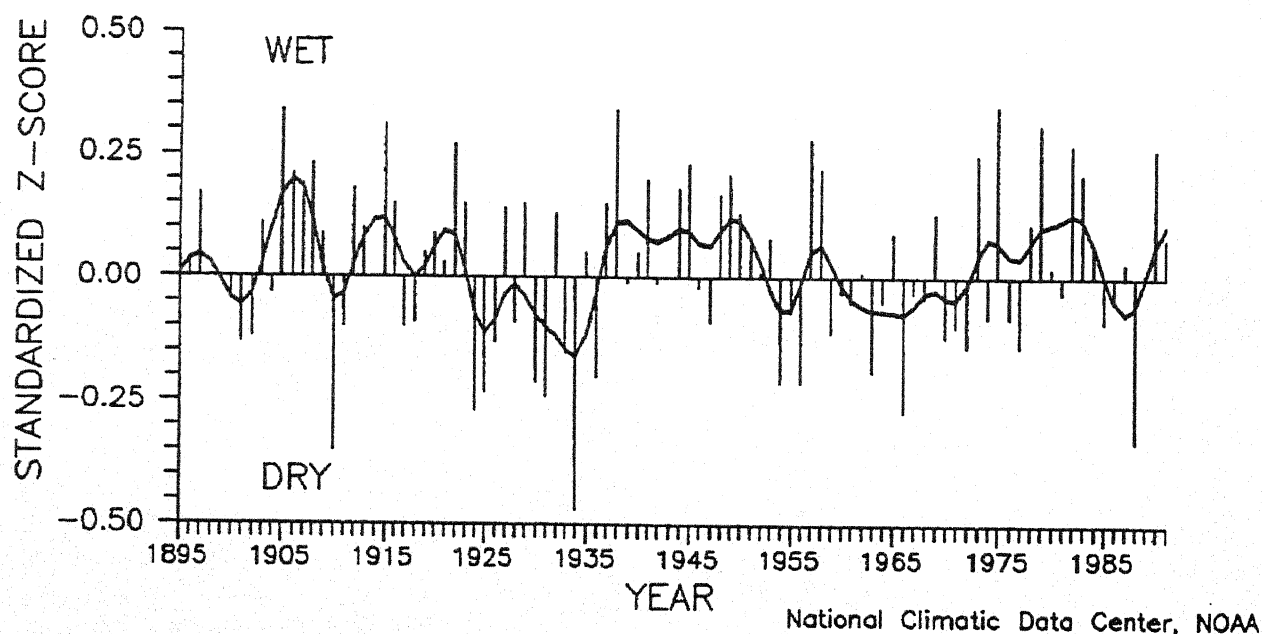
<i>STATE</i>	<i>RANK</i>	<i>STATE</i>	<i>RANK</i>	<i>STATE</i>	<i>RANK</i>	<i>STATE</i>	<i>RANK</i>
AL	96	IA	74	NE	81	RI	44
AZ	46	KS	18	NV	34	SC	87
AR	75	KY	40	<i>NH</i>	9	SD	92
CA	60	LA	97	NJ	50	TN	62
CO	33	ME	19	NM	74	TX	83
CT	40	<i>MD</i>	5	NY	14	UT	45
DE	42	MA	42	NC	63	VT	13
FL	97	MI	72	ND	66	VA	33
GA	95	MN	88	<i>OH</i>	7	WA	79
ID	49	MS	97	OK	33	WV	14
IL	14	MO	25	OR	45	WI	89
IN	11	MT	80	PA	9	WY	72

National Climatic Data Center

Top 10 rankings : **BOLD**

Bottom 10 rankings : *Italics*

**U.S. NATIONAL WEIGHTED MEAN PRECIPITATION INDEX
JANUARY–JULY, 1895–1991**



January – July Nationally Averaged Precipitation Index, 1895–1991, As Computed By The National Climatic Data Center. *January through July averaged above the median (38th wettest such period) primarily due to a wet Spring. This index takes into account local normals so that typically wet areas do not dominate the index.*